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JUL 16 1964

CURRENT SERIAL RECORDS

**WATER SUPPLY OUTLOOK**  
and  
**FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS**  
for  
**MONTANA**

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE,  
and  
MONTANA AGRICULTURAL EXPERIMENT STATION

Data included in this report were obtained by the agencies  
named above in cooperation with Federal, State, and private  
organizations listed on the inside back cover of this report.

AS OF  
MAY 1, 1964

# UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

## To Recipients of Water Supply Outlook Reports:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from advance estimates of the streamflow.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, up to 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1400 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

Streamflow forecasts are obtained by a comparison of total or maximum snow accumulation, as measured by snow water equivalent, to the subsequent spring and summer or snowmelt season runoff over a period of years. The snow water equivalent measured in selected snow courses provides most of the index to the streamflow forecast for the following season. More accurate forecasts are usually obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast procedure. Early season forecasts assume average climatic conditions through the snowmelt season.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions. Soil Conservation Service Reports may be secured from Water Supply Forecasting Unit, Soil Conservation Service, P.O. Box 2807, Portland, Oregon 97208.

## PUBLISHED BY SOIL CONSERVATION SERVICE

<u>REPORTS</u>	<u>ISSUED</u>	<u>LOCATION</u>	<u>COOPERATING WITH</u>
<b>RIVER BASINS</b>			
WESTERN UNITED STATES			
WESTERN UNITED STATES	MONTHLY (FEB.-MAY)	PORTLAND, OREGON	ALL COOPERATORS
BASIC DATA SUMMARY	OCTOBER 1	PORTLAND, OREGON	ALL COOPERATORS
<b>STATES</b>			
ALASKA	MONTHLY (MAR.-MAY)	PALMER, ALASKA	ALASKA S.C.D.
ARIZONA	SEMI-MONTHLY (JAN.15 - APR.1)	PHOENIX, ARIZONA	SALT R. VALLEY WATER USERS ASSOC. ARIZ. AGR. EXP. STATION
COLORADO AND NEW MEXICO	MONTHLY (FEB.-MAY)	FORT COLLINS, COLORADO	COLO. STATE UNIVERSITY COLO. STATE ENGINEER N. MEX. STATE ENGINEER
IDAHO	MONTHLY (JAN.-JUNE)	BOISE, IDAHO	IDAHO STATE RECLAMATION ENGINEER
MONTANA	MONTHLY (JAN.-JUNE)	BOZEMAN, MONTANA	MONT. AGR. EXP. STATION
NEVADA	MONTHLY (JAN.-MAY)	RENO, NEVADA	NEVADA DEPT. OF CONSERVATION AND NATURAL RESOURCES - DIVISION OF WATER RESOURCES
OREGON	MONTHLY (JAN.-JUNE)	PORTLAND, OREGON	OREG. STATE UNIVERSITY OREGON STATE ENGINEER
UTAH	MONTHLY (JAN.-JUNE)	SALT LAKE CITY, UTAH	UTAH STATE ENGINEER
WASHINGTON	MONTHLY (FEB.-JUNE)	SPOKANE, WASHINGTON	WN. STATE DEPT. OF CONSERVATION
WYOMING	MONTHLY (FEB.-JUNE)	CASPER, WYOMING	WYOMING STATE ENGINEER

## PUBLISHED BY OTHER AGENCIES

<u>REPORTS</u>	<u>ISSUED</u>	<u>AGENCY</u>
BRITISH COLUMBIA	MONTHLY (FEB.-JUNE)	WATER RESOURCES SERVICE, DEPT. OF LANDS, FOREST AND WATER RESOURCES, PARLIAMENT BLDG., VICTORIA, B.C., CANADA
CALIFORNIA	MONTHLY (FEB.-MAY)	CALIF. DEPT. OF WATER RESOURCES, P.O. BOX 388, SACRAMENTO, CALIF.

WATER SUPPLY OUTLOOK  
FEDERAL-STATE-PRIVATE COOPERATIVE SNOW SURVEYS  
for  
MONTANA

Report Prepared

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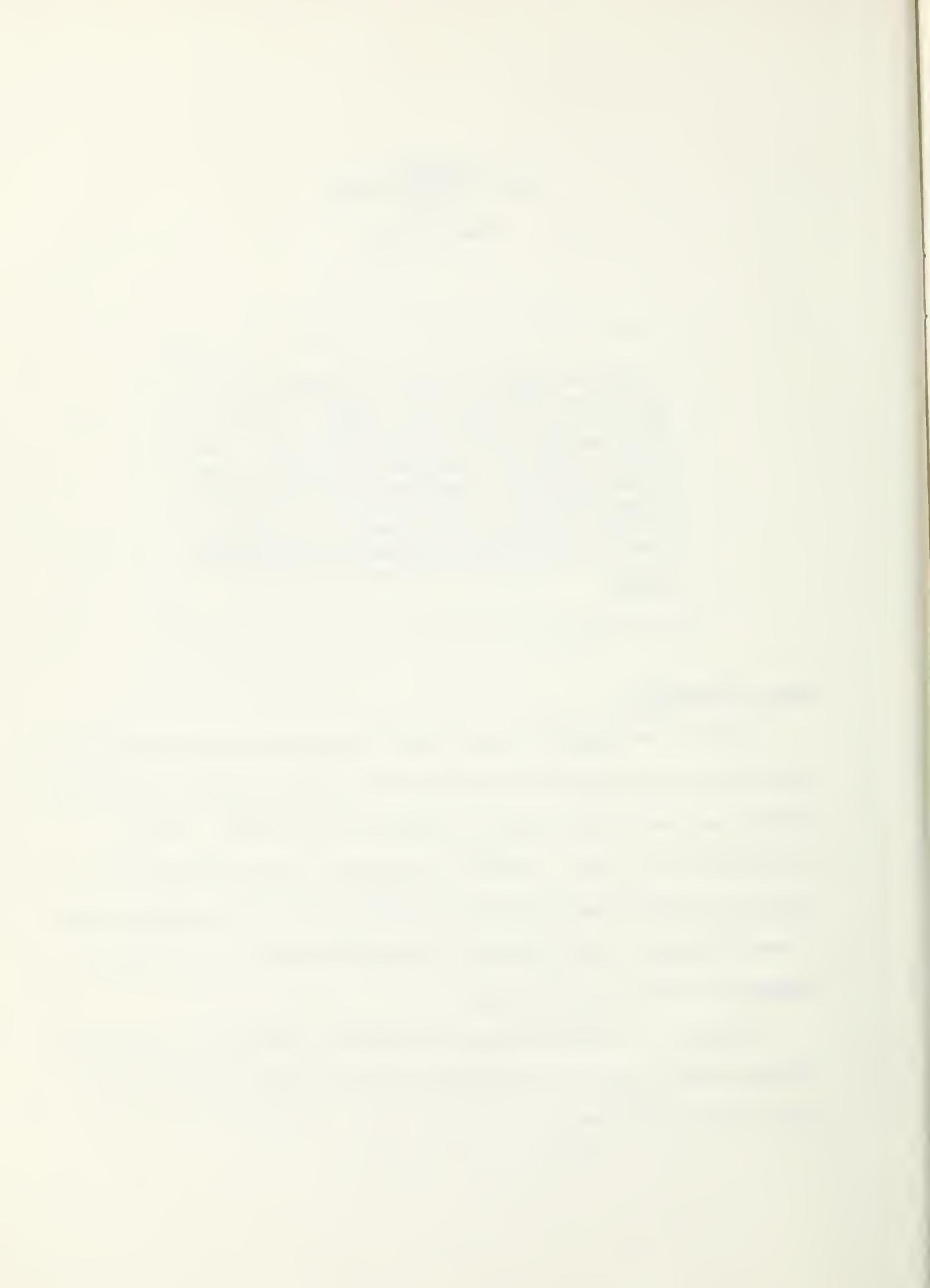


MONTANA  
WATER SUPPLY OUTLOOK  
as of  
May 1, 1964

### West of the Divide

Mountain precipitation during April was generally below average and very little melt occurred at the lower and median elevations. Many snow courses have water equivalents that exceed previous May 1 records. The mountain snow pack is now 25 to 40 percent above average in the Clark Fork and Flathead drainages, and 10 percent above average in the Kootenai drainage. In all areas it is about 50 percent more than was measured last year at this time.

With streamflow during April near one-half average and increase in the snow pack, forecasts for the May through September streamflow are 100 to 120 percent average.



Rapidly warming temperatures could produce high flows in the streams and rivers as snow melt will occur at all elevations. However, moderate or below average temperatures and precipitation will allow the snow pack to melt without abnormally high flow.

#### East of the Divide

The mountain snow pack is 40 to 60 percent above average for this time of year in the Missouri drainage. In the Upper Yellowstone area, it is about 15 percent above average. The above average accumulation is the result of moderate mountain precipitation and very little melt during April. Many low and median elevation snow courses have water equivalents greater than previous May 1 recordings.

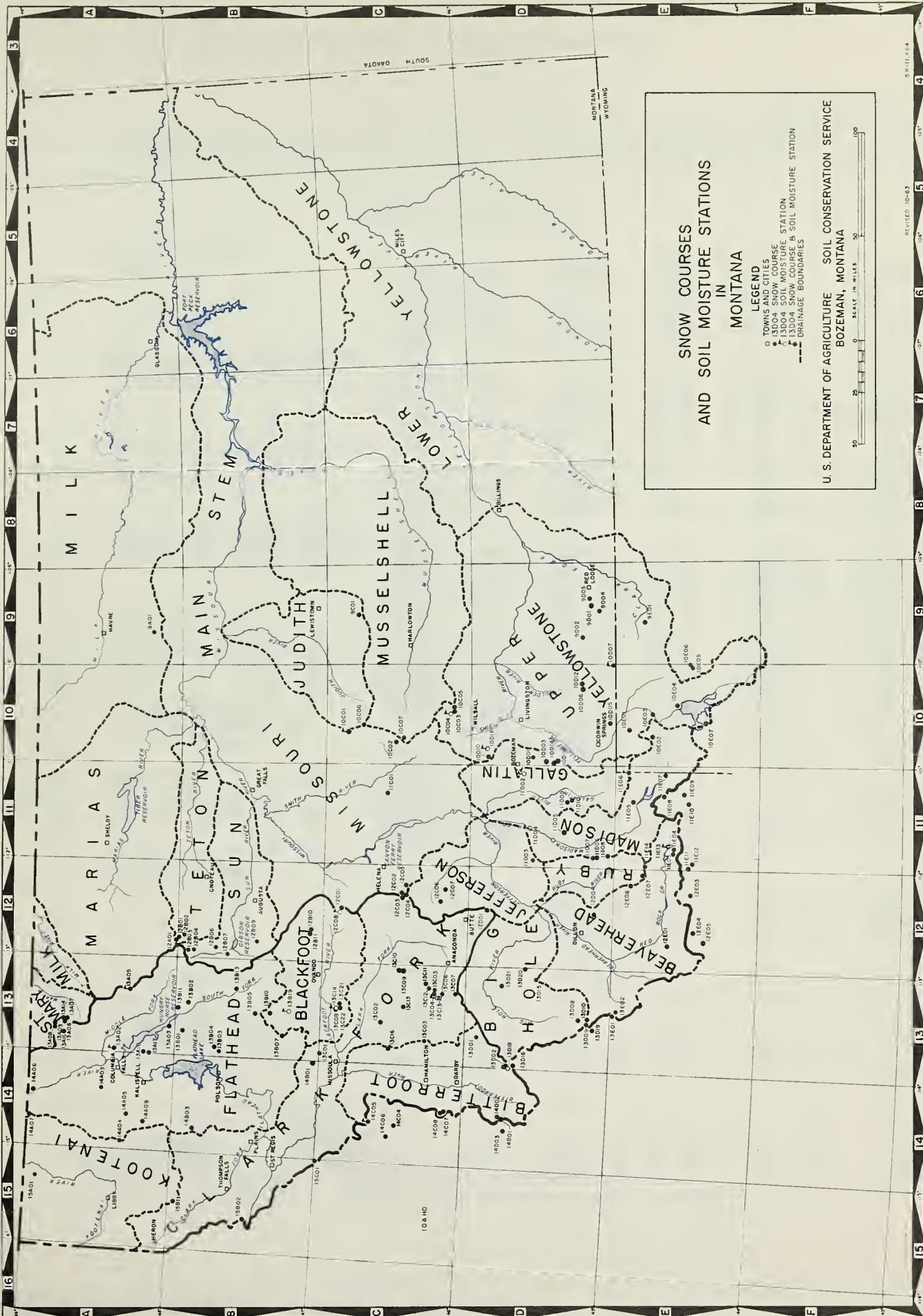
Streamflow forecasts for the May through September period vary from 10 to 15 percent below average on the Milk and Marias Rivers to 20 to 30 percent above average in an area encompassing the Boulder, Gallatin, Shields, Musselshell and Smith Rivers. Other streams are forecast to produce near their average May through September flows.

With the lack of melt during April, the potential for high flows during the main runoff season is increasing.

Irrigation supplies should be adequate in most areas with the possibility of good late season flow on most streams. The outlook on the Marias and Milk River drainages is improved considerably over the past month. With moderate temperature and precipitation, irrigation supplies along these streams could be generally adequate.

Storage in irrigation reservoirs is generally below average but streamflow will provide sufficient runoff for most of them to fill.





## INDEX TO MONTANA SNOW COURSES AND SOIL MOISTURE STATIONS

## SNOW COURSES

Drainage Basin & Course Name	Number	Elev.	Sec.	Type	Range	Record Began	Measuring Dates	Meas. By	Drainage Basin & Course Name	Number	Elev.	Sec.	Type	Range	Record Began	Measuring Dates								
COLUMBIA RIVER BASIN																								
KOOTENAI RIVER									GALLATIN RIVER															
Baree Creek	15811	5500	36	26N	31W	1956	3,4,5,5,6	2	Arch Falls	10014	7350	3	56	6E	1963	2,3,4,5								
Brush Creek	14446	5000	12	30N	26W	1937	3,4,5	1,2	Bear Basin	11009	8150	9	66	3E	1963	3,4,5								
Red Mountain	15401	6000	4	36N	29W	1937	3,4,5,5,6	1,2	Devil's Slide	10004	8100	14	56	6E	1935	2,3,4,5,6								
Wesel Olvide	14407	5450	8	37N	26W	1937	3,4,5,5,6	1,2	Hood Meadow	10003	6600	22	45	6E	1935	2,3,4,5								
PLAYEAD RIVER																								
Basco Peak	14803	5150	11	24W	25W	1961	3,4,5	1,5	Little Park	11010	7400	22	65	6E	1963	3,4,5								
Big Creek	13803	6750	7	22N	18W	1941	3,4,5	6	New World	10001	6700	24	38	6E	1939	2,3,4								
Camp Risery	13417	6400	30	28N	18W	1952	3,4,5	1,2	Twenty-One Miles	11006	7150	1	115	5E	1934	1,2,3,4,5								
Desert Mountain	13402	5600	22	31N	19W	1937	1,2,3,4,5	6	MISSOURI RIVER MAIN STEM															
Griffin Creek	13804	5000	14	23N	18W	1952	3,4,5	6	Boulder Mountain	11001	7950	1	9	3E	1963	3,4								
Griffin Creek Olvide	14409	5150	11	28N	25W	1960	3,4,5	1,5	Chesman Reservoir	12005	6200	19	8N	1936	1,2,3,4,5									
Neil Roering Divide	14403	5770	35	32N	22W	1942	1,2,3,4,5,5,6	2	Coyote Lake	10004	9000	19	25	3E	1963	3,4,5								
North Fork	13813	4530	18	21N	13W	1951	2,3,4,5	1	Elk Peak	10007	8000	10	8N	1943	3,4,5									
Kishinehah	13406	3090	14	37N	22W	1954	3,4	Grasshopper	10002	7000	19	9N	1938	3,4										
Leigh Creek	13405	3400	34	37N	22W	1957	3,4,5	1,2	Hills Hill	10001	7500	34	13N	1934	3,4,5									
Molas Pass	13403	5250	30	30N	14W	1934	1,2,3,4,5	6	Rocky Boy	9401	5200	15	28N	1941	3,4									
Mineral Creek	13416	4000	29	35N	17W	1957	3,4,5	6	Staple Pass	12001	6900	16	13N	1934	3,4,5									
North Fork Jocko	13807	6330	3	17N	17W	1943	3,4,5,5,6	1,5	Ten Mile Lower	12002	6250	13	8N	1935	1,2,3,4,5									
Spotted Bear Mountain	13802	7000	23	25N	15W	1948	1,2,3,4,5	1,2	Ten Mile Middle	12003	6800	35	8N	1934	1,2,3,4,5									
Strawberry Lake	13410	5400	11	28N	18W	1949	3,4,5	1	Ten Mile Upper	12004	8000	19	38	5E	1935	1,2,3,4,5								
Trout Lake	13801	5500	9	28N	17W	1949	3,4,5	1	SUN-INTER-MARIAS RIVERS															
Twin Creek	13801	3580	24	26N	16W	1951	1,2,3,4,5	5	Cabin Creek	12006	5400	33	23N	1949	3,4,5									
Upper Holland Lake	13805	7000	28	20N	15W	1948	3,4,5	1	Five-Ball	12009	5600	36	20N	1948	3,4									
CLARK FORK RIVER																								
Black Pine	13013	7100	23	8N	15W	1959	3,4,5	1	Freight Creek	12401	6000	13	26N	1948	3,4,5									
Copper Creek	12810	5700	1	15N	9W	1962	3,4,5	1,2	Goat Mountain	12807	7000	20	22N	1948	3,4,5									
Cotter Mine	12811	6250	22	15N	9W	1962	3,4,5	1,2	Waldron Creek	12802	5600	16	25N	1948	3,4,5									
Coyote Hill	13810	4200	12	18N	16W	1947	1,2,3,4,5	1,2	West Fork	12801	6000	6	25B	1948	3,4,5									
El Dorado Mine	13009	7800	23	8N	12W	1947	3,4	Wrong Creek	12803	5700	32	25N	1949	3,4,5										
Elk Creek	13011	9000	12	15N	9W	1947	3,4,5	1	Wrong Ridge	12803	6800	17	25N	1949	3,4,5									
Gold Creek	13010	6200	14	15N	9W	1949	3,4	JUDITH RIVER																
Intergeard	13004	6450	6	5N	13W	1936	2,3,4,5	4	Spur Fork	10006	8000	20	12N	9E	1963	3,4,5								
Lubrecht Forest No. 3	13021	5450	19	13N	14W	1951	1,2,3,4,5	8	UPPER YELLOWSTONE RIVER															
Lubrecht Forest No. 4	13022	4850	23	13N	15W	1951	1,2,3,4,5	8	Bald Ridge	10005	7500	11	4N	1961	3,4,5									
Lubrecht Forest No. 5	13020	11000	11	13N	15W	1951	1,2,3,4,5	8	Camp Senia	9001	7890	2	8S	1937	3,4,5									
Red Lion	13012	7200	22	10N	13W	1958	3,4,5	1,2	Grizzly Mountain	10005	8400	22	9S	1937	3,4,5									
Skalkeah Summit	13003	7260	30	6N	17W	1937	3,4,5,5,6	1	Independence	10006	8000	22	7S	1940	3,4,5									
Slide Rock Mountain	13002	7200	35	10N	16W	1937	3,4,5	1	Monument Peak	10012	9000	22	7S	1961	1,2,3,4,5									
Southern Cross	13005	6500	8	5N	13W	1936	2,3,4	4	Northeast Entrance	10007	7400	33	9S	1937	1,2,3,4,5									
Starvation Creek	13007	5500	19	10N	13W	1939	1,2,3,4,5	1	Forbesgate R. S.	10001	6500	10	4N	1938	1,2,3,4,5									
Stuart Mill	13006	5500	19	10N	13W	1936	2,3,4,5	4	Thompson Creek	9004	8850	10	8S	1961	3,4,5									
Stuart Mountain	13001	7400	6	14N	18W	1936	1,2,3,4,5	6	Sacajawea	10010	6500	36	2N	1960	3,4,5									
TV Mountain	13001	6800	33	5N	23W	1956	1,2,3,4,5	8	West Rosebud	9002	7500	9	7S	1960	3,4									
BITTERROOT RIVER																								
Ashrose	13016	6680	28	9N	18W	1960	3,4,5	1	SOIL MOISTURE STATIONS															
East Fork R. S.	13001	5200	16	28N	17W	1937	3,4	COLUMBIA RIVER BASIN																
Gibbons Pass	13002	7200	4	2S	19W	1934	1,2,3,4,5,5,6	1,3	Desert Mountain	13402M	5600	24	31N	19W	1956	Monthly								
Lost Horse	14407	5940	5	4N	23W	1960	3,4,5	1	Marles Pass	13403M	5250	34	30N	14W	1950	Monthly								
Nez Perce Camp	14402	5580	19	1S	23W	1937	3,4,5	1	CLARK FORK RIVER															
Nez Perce Pass	14401	6570	25	1S	23W	1937	3,4,5	1	Georgetown Lake	12015M	6500	6	13N	13W	1962	Monthly								
Twin Lake	14408	6510	32	5N	23W	1960	3,4,5	1	Lakeview	11013M	6700	23	14S	2W	1962	Monthly								
SASKATCHEWAN RIVER BASIN																								
Iceberg Lake No. 3	13403	5600	1	35N	17W	1922	5	3,9	PLATEAU RIVER															
Iceberg Lake No. 9	13411	5900	22	35N	16W	1955	5	3,9	Desert Mountain	12004M	4100	11	13N	15W	1961	Monthly								
Mount Allan No. 1	13407	5700	27	35N	16W	1952	5	3,9	Seelye Lake	12019M	4030	21	17N	15W	1963	Monthly								
Flagan Pass No. 6	13406	5500	27	35N	16W	1922	5	3,9	BITTERROOT RIVER															
Fernigan No. 8	13408	5800	36	36N	17W	1937	5	3,9,9	Gibbons Pass	13018M	7100	4	2S	19W	1962	Monthly								
MISSOURI RIVER BASIN																								
BEAVERHEAD RIVER																								
Bloody Glick	13010	7600	12	8S	16W	1948	3,4,5	1	Lakeview	11013M	6700	23	14S	2W	1962	Monthly								
Merle Creek	12004	6400	22	8S	7W	1953	3,4	1	MADISON RIVER															
Gold Stone	13009	8100	11	8S	16W	1940	3,4,5	1	Red Bluff	11004M	4800	7	3S	1E	1961	Monthly								
Lakeview Canyon	11004	6930	26	1LS	2W	1948	3,4,5	10	GALLATIN RIVER															
Lakeview Ridge	11003	7400	27	1LS	2W	1948	3,4,5	10	College Site	11002M	4856	18	2S	5E	1956	Monthly								
Leahli Pass	13001	7480	9	10S	15W	1948	3,4	1	Twenty-One Miles	11004M	7150	1	11S	5E	1963	Monthly								
Trail Creek	13002	7090	15	10S	15W	1948	3,4	1	MISSOURI RIVER MAIN STEM															
White Pine Ridge	12001	8850	18	1LS	4W	1948	3,4,5	1	Staple Pass	12008M	6350	16	13N	7W	1963	Monthly								
RUBY RIVER																								
Clover Meadow	11008	8600	28	9S	2W	1963	3,4,5	1	King's Hill	10001	7420	34	13N	6E	1963	Monthly								
Olvide	12507	7900	14	12S	4W	1963	3,4,5	1	YELLOWSTONE RIVER															
Notch	12006	8500	18	11S	4W	1963	3,4,5	1	Battle Ridge	11010M	6000	32	2S	7E	1960	Monthly								
Elk Horn Spring	12015	7800	21	1S	2W	1935	3,4,5	3	Northeast Entrance	11007M	7150	33	9S	11E	1962	Monthly								
Foolbean	13021	8500	11	1S	13W	1963	3,4,5	1	Shields River	10														

#### Legend

to Agency that secures the snow survey is as follows:

1. Soil Conservation Service	6. National Park Service
2. U. S. Forest Service	7. Montana Experiment Station
3. U. S. Geological Survey	8. Montana State Forestry School
4. Montana Power Company	9. Dcamion Power & Power Bureau
5. U. S. Indian Service	10. Bureau of Sport Fisheries & Wildlife

#### H - Soil Moisture

# WATER SUPPLY FORECASTS

AS OF MAY 1, 1964

NO.	RIVER AND FORECAST POINT	FORECAST	FORECAST	PERCENT	(1000 Acre Feet)	
		PERIOD	THIS YEAR		LAST YEAR*	AVERAGE

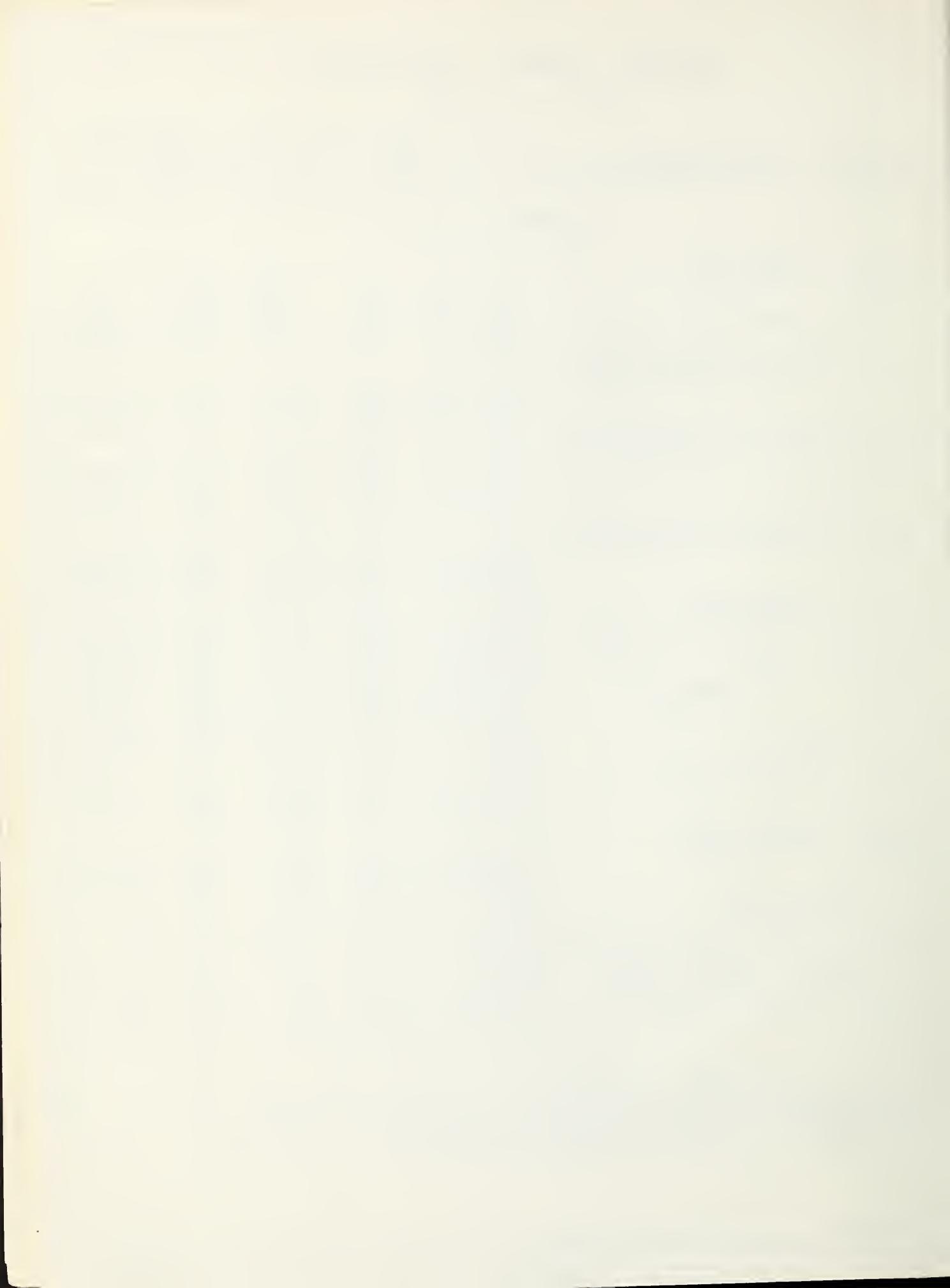
## COLUMBIA RIVER BASIN

KOOTENAI RIVER						
3030	Libby (at)	May-Sept	7220	102	6551	7053
		May-July	6170	102	5534	6024
3050	Leonia (at)	May-Sept	8200	102	7376	7994
		May-July	6920	102	6229	6903
NORTH FORK FLATHEAD RIVER						
3555	Columbia Falls (near)	May-Sept	1842	105	1472	1749
		May-July	1660	105	1322	1576
		May-June	1365	105	1031	1298
MIDDLE FORK FLATHEAD RIVER						
3585	West Glacier (near)	May-Sept	1800	107	1337	1687
		May-July	1660	107	1219	1553
		May-June	1375	107	980	1286
SOUTH FORK FLATHEAD RIVER						
3625	Columbia Falls (nr)(17)	May-Sept	2260	112	1446	2015
		May-July	2120	112	1360	1897
		May-June	1810	112	1171	1617
FLATHEAD RIVER						
3630	Columbia Falls (at)(17)	May-Sept	6030	107	4463	5608
		May-July	5520	107	4057	5155
		May-June	4635	107	3282	4302
3720	Polson (near)(18)	May-Sept	7190	109	5045	6605
		May-July	6650	109	4603	6081
		May-June	5500	109	3736	5039
SWAN RIVER						
3700	Big Fork (near)	May-Sept	650	117	452	554
		May-July	564	117	391	479
		May-June	440	117	312	374
BLACKFOOT RIVER						
3400	Bonner (near)	May-Sept	1050	119	622	879
		May-July	933	119	536	783
		May-June	782	119	441	655
FLINT CREEK						
3301	Boulder Creek (below)(13)	May-Sept	76.5	117	62.2	65.1
		May-July	61.6	117	47.0	51.6
MIDDLE FORK ROCK CREEK						
3320	Philipsburg (near)	May-Sept	85.3	113	69.9	75.6
		May-July	76.2	113	62.3	67.6

(13) Sum, Flint Creek at Maxville and Boulder Creek at Maxville.

(17) Corrected for storage in Hungry Horse Reservoir.

(18) Corrected for storage in Hungry Horse Reservoir and Flathead Lake.



# WATER SUPPLY FORECASTS

AS OF MAY 1, 1964

NO.	RIVER AND FORECAST POINT	FORECAST	FORECAST	PERCENT AVERAGE	(1000 Acre Feet)	
		PERIOD	THIS YEAR		LAST YEAR*	AVERAGE
CLARK FORK RIVER						
3404	Milltown (above)(14)	May-Sept	810	116	625	698
		May-July	700	116	532	600
		May-June	572	116	428	492
3405	Missoula (above)	May-Sept	1860	118	1246	1577
		May-July	1633	118	1068	1383
		May-June	1354	118	868	1147
3530	Missoula (below)	May-Sept	3310	112	2418	2950
		May-July	2973	112	2153	2648
		May-June	2464	112	1786	2200
3545	St. Regis (at)	May-Sept	4516	114	3052	3948
		May-July	4060	114	2678	3540
		May-June	3380	115	2200	2950
3890	Plains (near)(18)	May-Sept	12170	112	8312	10837
		May-July	11000	112	7450	9816
		May-June	9100	112	6036	8125
3920	Whitehorse Rapids (at)(19)	May-Sept	13600	112	9055	12144
		May-July	12300	112	8064	10975
		May-June	10100	112	6529	9027
WEST FORK BITTERROOT RIVER						
3425	Conner (near)(15)	May-Sept	169	110	141	153
		May-July	155	110	130	141
BITTERROOT RIVER						
3440	Darby (near)	May-Sept	553	106	495	519
		May-July	511	107	453	479
		May-June	437	107	385	409
3528	Missoula (at)(16)	May-Sept	1450	105	1172	1379
		May-July	1340	105	1085	1272
		May-June	1110	105	918	1066
BLODGETT CREEK						
3475	Corvallis (near)	May-Sept	44.0	105	32.7	41.9
		May-July	41.6	105	31.5	39.6

(14) Difference in observed flow, Clark Fork above Missoula & Blackfoot near Bonner.

(15) Corrected for storage in Painted Rocks Reservoir.

(16) Difference in observed flow, Clark Fork above and below Missoula.

(18) Corrected for storage in Hungry Horse Reservoir and Flathead Lake.

(19) Corrected for storage in Hungry Horse, Flathead Lake and Noxon Reservoirs.



# WATER SUPPLY FORECASTS

AS OF MAY 1, 1964

NO.	RIVER AND FORECAST POINT	FORECAST	FORECAST	PERCENT AVERAGE	(1000 Acre Feet)	
		PERIOD	THIS YEAR		LAST YEAR*	AVERAGE

## MISSOURI RIVER BASIN

	RED ROCK RIVER					
0110	Kennedy Ranch (at)	May-Sept	51.3	94	34.0	54.5
		May-July	45.9	94	29.1	48.7
0125	Monida (near)(1)	May-Sept	58.0	93	41.2	62.3
		May-July	54.2	93	38.9	58.1
	BIG HOLE RIVER					
0255	Melrose (near)	May-Sept	655	98	615	668
		May-July	600	98	570	611
	BOULDER RIVER					
0330	Boulder (near)	May-Sept	88.3	127	73.8	69.4
		May-July	83.7	127	70.8	66.0
	JEFFERSON RIVER					
0345	Sappington (at)	May-Sept	878	96	862	913
		May-July	768	96	761	798
	MADISON RIVER					
0375	West Yellowstone (near)	May-Sept	178	95	181	187
		May-July	129	95	133	136
0385	Grayling (near)(2)	May-Sept	375	96	379	389
		May-July	287	96	280	298
0410	McAllister (near)(3)	May-Sept	625	95	635	659
		May-July	490	95	479	516
	GALLATIN RIVER					
0435	Gateway (near)	May-Sept	511	118	430	431
		May-July	434	118	360	367
	HYALITE CREEK					
0500	Bozeman (near)(4)	May-Sept	40.0	120	36.7	33.2
		May-July	34.0	120	31.6	28.2
	GALLATIN RIVER					
0525	Logan (at)	May-Sept	525	123	451	426
		May-July	440	123	379	356

(1) Corrected for storage in Lima Reservoir.

(2) Corrected for storage in Hebgen Lake.

(3) Corrected for storage in Hebgen and Ennis Lakes.

(4) Corrected for storage in Middle Creek Reservoir.



# WATER SUPPLY FORECASTS

AS OF MAY 1, 1964

NO.	RIVER AND FORECAST POINT	FORECAST	FORECAST	PERCENT AVERAGE	(1000 Acre Feet)	
		PERIOD	THIS YEAR		LAST YEAR*	AVERAGE
MISSOURI RIVER						
0545	Toston (at)(3)	May-Sept	2051	102	1928	2006
		May-July	1724	102	1646	1693
0908	Fort Benton (at)(5)	May-Sept	3200	103	2497	3098
		May-July	2680	103	2056	2575
1095	Virgelle (at)(6)	May-Sept	3740	98	2779	3799
		May-July	3150	98	2322	3209
1150	Zortman (near)(6)	May-Sept	4110	99	3054	4140
		May-July	3420	99	2516	3477
1320	Fort Peck Dam (below)(7)	May-Sept	3940	98	2914	4027
		May-July	3370	98	2486	3446
1770	Wolf Point (near)(7)	May-Sept	4120	97		4256
		May-July	3550	97		3647
3300	Williston, N. D. (nr)(8)	May-Sept	9800	93	9836	10557
		May-July	8450	93	8740	9144
PRICKLY PEAR CREEK						
0615	Clancy (near)	May-Sept	25.6	124	17.1	20.7
		May-July	21.8	124	14.7	17.6
SUN RIVER						
0786	Gibson Dam (at)(10)	May-Sept	536	97	361	551
		May-July	497	97	318	501
MARIAS RIVER						
0995	Shelby (near)	May-Sept	495	85	281	581
		May-July	448	85	258	527
SOUTH FORK MUSSELSHELL R.						
1185	Martinsdale (above)	May-Sept	62.0	134	42.0	46.3
		May-July	59.3	134	40.1	44.2
MILK RIVER						
1350	Eastern Crossing (at)	May-Sept	175	90	198	195

- (3) Corrected for storage in Hebgen and Ennis Lakes.
- (5) Corrected for storage in Canyon Ferry Reservoir.
- (6) Corrected for storage in Canyon Ferry and Tiber Reservoirs.
- (7) Corrected for storage in Canyon Ferry, Tiber and Fort Peck Reservoirs.
- (8) Corrected for storage in Canyon Ferry, Tiber, Fort Peck, Buffalo Bill and Boysen Reservoirs.
- (10) Corrected for storage in Gibson Reservoir and diversions.



# WATER SUPPLY FORECASTS

AS OF MAY 1, 1964

NO.	RIVER AND FORECAST POINT	FORECAST	FORECAST	PERCENT AVERAGE	(1000 Acre Feet)	
		PERIOD	THIS YEAR		LAST YEAR*	AVERAGE
YELLOWSTONE RIVER						
1915	Corwin Springs (at)	May-Sept	1800	96	1865	1888
		May-July	1495	96	1568	1557
1925	Livingston (near)	May-Sept	2070	97	2048	2136
		May-July	1695	97	1708	1747
2145	Billings (at)	May-Sept	3866	97	3793	3998
		May-July	3300	97	3299	3393
3090	Miles City (at)(12)	May-Sept	5440	88	5964	6182
		May-July	4700	88	5316	5343
3295	Sidney (near)(12)	May-Sept	5500	88		6215
		May-July	4800	88		5430
SHIELDS RIVER						
1935	Clyde Park (at)	May-Sept	117	127	90.7	92.5
		May-July	108	127	83.7	84.4
BOULDER RIVER						
2000	Big Timber (at)	May-Sept	355	96	304	372
		May-July	325	96	291	338
STILLWATER RIVER						
2050	Absarokee (near)(11)	May-Sept	565	95	592	594
		May-July	473	95	506	497
CLARKS FORK RIVER						
2075	Chance (at)	May-Sept	561	95	576	590
		May-July	500	95	530	525
2085	Edgar (at)	May-Sept	586	95	591	616
		May-July	515	95	533	540
ROCK CREEK						
2095	Red Lodge (near)	May-Sept	105	96	110	109
		May-July	80.6	96	86.5	83.6

(11) Corrected for storage in Mystic Lake.

(12) Corrected for storage in Buffalo Bill and Boysen Reservoirs.



# SNOW SURVEY DATA

AS OF MAY 1, 1964

SNOW COURSE			CURRENT DATA			PAST RECORD	
NO.	NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH	WATER CONTENT	WATER CONTENT	(Inches)
						LAST YEAR	AVERAGE

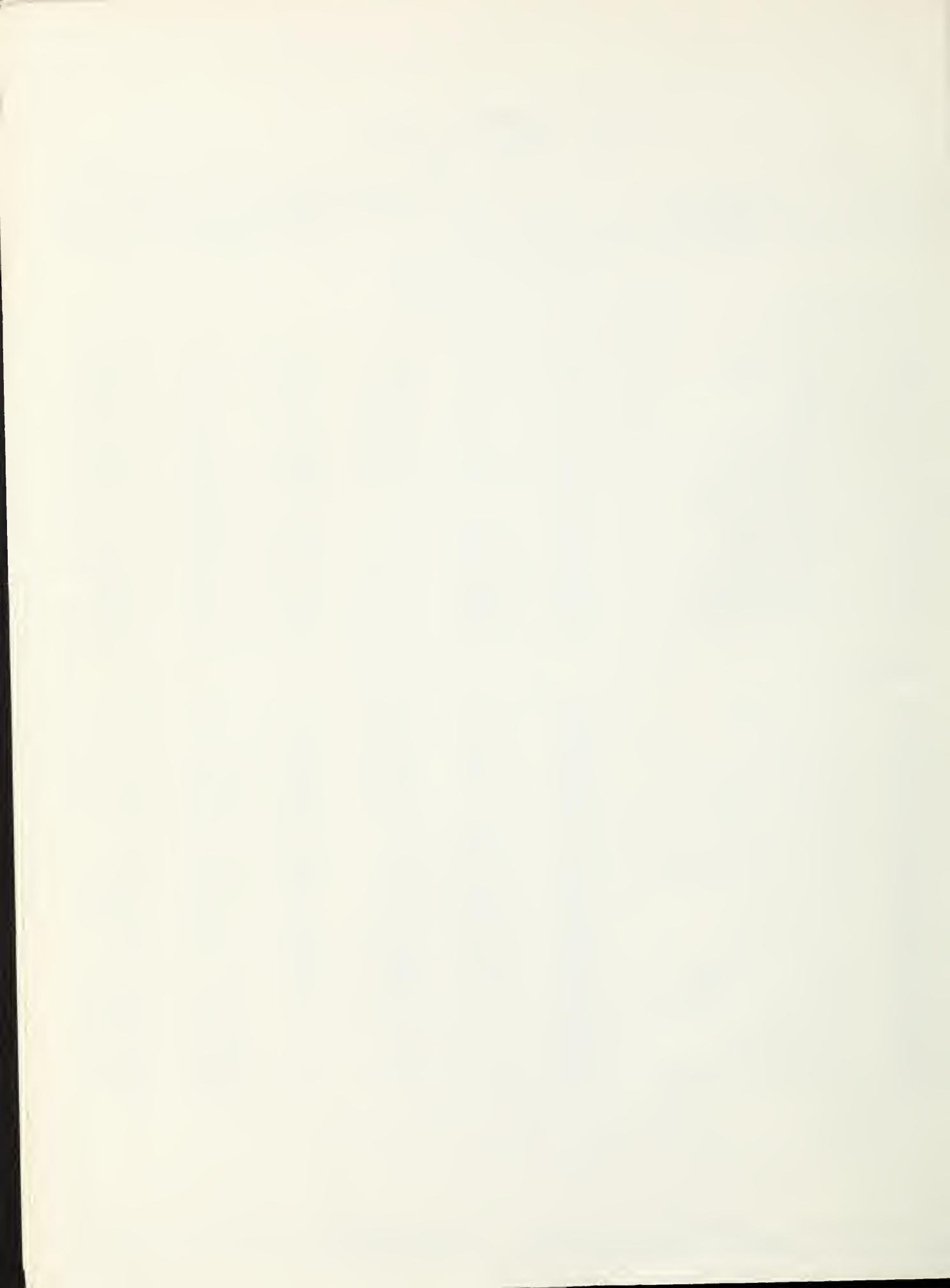
## COLUMBIA RIVER BASIN

### KOOTENAI RIVER

15B11	Baree Creek	5500	5/1	124	58.8	31.4	48.2*
14A04	Brush Creek	5000	4/28	33	12.4	8.2	10.5*
BC 10	Fernie	3500	4/29	11	3.8	0.0	2.7*
BC 12A	Field	4200	5/1	0	0	0.0	0.8*
BC 43	Gray Creek	5100	4/30	60	23.7	15.7	20.4*
BC 33	Kicking Horse	5400	5/1	36	13.3	11.3	11.8*
BC 32	Marble Canyon	5000	5/1	34	10.3	7.9	13.5*
BC 10B	Morrissey Ridge	6100				26.1	-
BC 10A	New Fernie	4100	4/29	27	11.2	2.2	6.7*
15A01	Red Mountain	6000	4/29	44	16.6	14.2	19.7
BC 8A	Sinclair Pass	4500	5/1	5	1.7	0.0	2.1*
BC 20A	Sullivan Mine	5100	4/30	32	11.5	8.2	11.9*
BC 41	Upper Elk River	4400	4/23	12	3.2	0.0	2.2*
14A07	Weasel Divide	5450	4/30	85	37.8	26.4	34.7*

### FLATHEAD RIVER

14B03	Bassoo Peak	5150	4/27	24	8.9	3.7	-
13A11	Beaver Lake	5900	4/29	71	30.9	-	-
13B03	Big Creek	6750	4/30	112	51.6	47.9	48.4*
13A17	Camp Misery	6400	4/28	139	57.0	40.5	-
13A02	Desert Mountain	5600	4/27	41	16.5	9.2	13.0
13B04	Fatty Creek	5500	4/30	63	28.0	18.4	-
14A09	Griffin Creek Divide	5150	4/29	25	9.6	4.4	-
13B12	Gunsight Lake	6300	4/29	114	50.9	-	-
14A03	Hell Roaring Divide	5770	4/30	88	38.8	25.2	28.7
13B13	Holbrook	4530	4/29	11	5.0	0.0	1.2*
14A05	Logan Creek	4300	4/28	13	4.4	2.4	2.7*
13A05	Marias Pass	5250	4/29	41	16.6	9.7	15.7
13A16	Mineral Creek	4000	5/2	52	21.0	-	-
13B07	North Fork Jocko	6330	5/1	124	58.1	39.2	44.7*
13B02	Spotted Bear Mountain	7000	4/29	37	16.5	7.6	12.6*
13A10	Strawberry Lake	5600				27.2	40.0*
13B01	Trinkus Lake	6100				33.7	41.4*
13B11	Twin Creeks	3580	4/24	24	9.8	0.0	0.8*
13B05	Upper Holland Lake	7000				28.0	36.8*



# SNOW SURVEY DATA

AS OF MAY 1, 1964

SNOW COURSE			CURRENT DATA			PAST RECORD	
NO.	NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH	WATER CONTENT	(inches)	
						WATER CONTENT	LAST YEAR
							AVERAGE

## CLARK FORK RIVER

13C13	Black Pine	7100	4/28	50	17.8	14.4	-
12B10	Copper Creek	5700	4/27	36	14.6	-	-
12B11	Cotter Mine	6250	4/27	48	18.5	-	-
13B10	Coyote Hill	4200	4/30	13	5.2	0.0	2.1*
13C11	Fred Burr Pass	8000	4/30	78	30.6	31.5	-
15C01	Hoodoo Creek	6200	4/30	126	55.2	35.5	46.9*
13C04	Intergaard	6450	4/30	26	9.0	8.1	-
15B02	Lookout	5250	4/28	104	44.3	25.2	33.6*
13C21	Lubrecht Forest No. 3	5450	4/26	24	7.9	0.0	2.7*
13C22	Lubrecht Forest No. 4	4650	4/26	4	1.2	0.0	0.4*
13C08	Lubrecht Forest No. 6	4040	4/26	0	0	0.0	0.1*
13C12	Red Lion	7100	4/30	50	18.2	20.2	-
13C03	Skalkaho Summit	7260	4/28	72	29.0	25.0	25.8*
13C02	Slide Rock Mountain	7100	4/29	57	21.8	16.6	14.0*
13C18	Spring Gulch	6000	4/25	38	11.0	0.0	-
13C07	Storm Lake	7780	4/30	45	16.8	17.3	16.3*
13C01	Stuart Mountain	7400	4/25	96	36.2	31.4	30.1*
14B01	TV Mountain	6800	4/27	67	22.3	19.4	21.0*

## BITTERROOT RIVER

13C16	Ambrose	6480	4/29	41	16.5	12.9	-
13D02	Gibbons Pass	7100	5/1	63	26.7	20.0	23.0
14C05	Lolo Pass	5230				19.6	29.7*
14C07	Lost Horse	5940	4/28	103	43.6	23.8	-
14D02	Nez Perce Camp	5580	4/27	49	20.0	7.8	8.3*
14D01	Nez Perce Pass	6570	4/27	58	22.6	9.6	12.6
14C08	Twin Lakes	6510	4/28	128	54.9	36.6	-



# SNOW SURVEY DATA

AS OF MAY 1, 1964

SNOW COURSE			CURRENT DATA			PAST RECORD	
NO.	NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE
							(inches)

## MISSOURI RIVER BASIN

### BEAVERHEAD RIVER

13B10	Bloody Dick	7600	4/27	42	12.3	-	-
13D15	Elk Horn Springs	7800	4/29	32	9.6	8.0	8.7*
13D09	Gold Stone	8100	4/27	57	16.8	-	-
11E04	Lakeview Canyon	6930	4/27	39	12.1	8.4	9.6*
11E03	Lakeview Ridge	7400	4/27	33	10.1	7.4	7.6*
12E01	White Pine Ridge	8850	4/29	23	8.1	7.8	-

### RUBY RIVER

11D08	Clover Meadow	8600	4/29	60	19.8	15.4	-
12E07	Divide	7900	4/29	37	12.0	9.3	-
12E06	Notch	8500	4/29	58	16.9	13.5	-

### BIG HOLE RIVER

13D20	Abundance Lake	8800	4/29	64	21.4	19.8	-
13D19	Darkhorse Lake	8600	4/29	77	27.7	22.5	-
13D21	Foolhen	8500	4/29	53	18.8	17.7	-
13D08	Jahnke Creek	7340	4/27	29	8.6	-	-

### JEFFERSON RIVER

12C07	Berry Meadow	7300	4/28	31	9.4	-	-
12D01	Pipestone Pass	7200	4/29	21	6.7	6.4	3.9*

### MADISON RIVER

11E09	Big Springs	6500				10.5	-
11D07	Call Road	8050	4/29	46	14.2	12.5	-
11D06	Crockett Lake	8400	4/29	43	13.3	13.2	-
11E05	Hebgen Dam	6550	4/29	24	10.3	5.1	3.9
11E10	Island Park	6315				8.1	-
10E02	Norris Basin	7500	4/28	37	13.0	10.9	6.3*
11E08	Valley View	6500				11.3	-
11E07	West Yellowstone	6700	4/29	23	8.3	4.6	5.6



# SNOW SURVEY DATA

AS OF MAY 1, 1964

				CURRENT DATA			PAST RECORD	
SNOW COURSE			DATE OF SURVEY	SNOW DEPTH	WATER CONTENT	(inches)		
NO.	NAME	ELEVATION				WATER CONTENT	LAST YEAR	
10D14	Arch Falls	7350	5/2	45	15.5	13.5	-	
11D09	Bear Basin	8150	4/30	65	25.2	20.4	-	
10D04	Devil's Slide	8100	5/2	78	27.0	25.2	23.4	
10D03	Hood Meadow	6600	5/1	30	12.1	9.3	5.5	
11D10	Little Park	7400	4/30	51	19.4	15.5	-	
11E06	Twenty-One Mile	7150	4/29	47	18.6	11.2	14.5	

## GALLATIN RIVER

10D14	Arch Falls	7350	5/2	45	15.5	13.5	-
11D09	Bear Basin	8150	4/30	65	25.2	20.4	-
10D04	Devil's Slide	8100	5/2	78	27.0	25.2	23.4
10D03	Hood Meadow	6600	5/1	30	12.1	9.3	5.5
11D10	Little Park	7400	4/30	51	19.4	15.5	-
11E06	Twenty-One Mile	7150	4/29	47	18.6	11.2	14.5

## MISSOURI RIVER (Main Stem)

11C01	Boulder Mountain	7950				-	-
12C05	Chessman Reservoir	6200	4/29	21	7.4	1.8	2.6
10C07	Elk Peak	8000	4/27	60	21.2	-	-
10C02	Grasshopper	7000	4/27	28	8.6	-	-
10C01	Kings Hill	7500	4/27	56	18.8	10.4	14.1*
12C01	Stemple Pass	6600	4/27	46	14.2	8.1	8.7
12C02	Ten Mile Lower	6600	4/28	25	9.1	5.9	3.6
12C03	Ten Mile Middle	6800	4/28	44	14.5	13.1	9.0
12C04	Ten Mile Upper	8000	4/28	54	19.1	17.2	12.7

## SUN-TETON-MARIAS RIVERS

13A15	Badger Pass	6900	4/29	108	46.4	-	-
12B06	Cabin Creek	5200	4/29	0	0	-	-
12B09	Five Bull	5700	4/27	20	6.6	-	-
12A01	Freight Creek	6000	4/28	52	19.6	-	-
12B07	Goat Mountain	7000	4/30	36	12.6	6.0	9.2*
12B02	Waldron Creek	5300	4/28	9	2.8	-	-
12B01	West Fork	6000	4/28	49	18.3	-	-
12B04	Wrong Creek	5700	4/29	37	17.4	-	-
12B03	Wrong Ridge	6800	4/29	57	25.6	-	-

## JUDITH RIVER

10C06	Spur Park	8000	4/28	71	27.2	-	-
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# SNOW SURVEY DATA

AS OF MAY 1, 1964

SNOW COURSE			CURRENT DATA			PAST RECORD	
NO.	NAME	ELEVATION	DATE OF SURVEY	SNOW DEPTH	WATER CONTENT	WATER CONTENT	(inches)
						LAST YEAR	AVERAGE

## SASKATCHEWAN RIVER

13A03	Iceberg Lake No. 3	5600	4/30	80	39.4	23.6	27.1
13A14	Josephine Lower No. 9	4900	4/29	44	19.3	8.8	17.1*
13A07	Mount Allen No. 7	5700	4/28	111	50.8	34.8	47.3
13A06	Piegan Pass No. 6	5500	4/29	93	45.2	28.4	38.4
13A08	Ptarmigan No. 8	5800	4/30	98	46.6	27.6	37.8

## UPPER YELLOWSTONE RIVER

9D01	Camp Senia	7890	4/29	57	15.0	11.0	-
10E03	Canyon	7750	4/29	46	16.0	14.5	12.6*
10E06	East Entrance	7000	4/30	14	4.7	7.2	4.9*
9D05	Grizzly Peak	8400	4/28	84	24.8	21.9	-
10D06	Independence	8000	4/30	48	18.8	17.6	-
10E04	Lake Camp No. 2	7850	4/30	30	7.0	5.5	7.8*
9E01	Lodgepole	8200	4/30	40	11.3	11.0	11.0*
10E01	Lupine Creek	7300	4/29	28	8.2	8.7	8.6*
10D12	Monument Peak	9000	4/30	78	29.6	25.0	-
10D07	Northeast Entrance	7400	4/29	26	8.2	7.2	6.6*
10D10	Sacajawea	6550	5/4	57	17.0	10.6	-
10E05	Sylvan Pass	7100	4/30	31	11.1	12.6	10.7*
9D04	Timberline Creek	8850	4/29	78	23.8	16.6	-



# SOIL MOISTURE DATA

AS OF MAY 1, 1964

SOIL MOISTURE STATION			SOIL PROFILE		CURRENT DATA		PAST RECORD	
NO.	NAME	ELEVATION	DEPTH	FIELD CAPACITY	DATE OF SURVEY	SOIL MOISTURE	LAST YEAR	**AVERAGE
								(Inches)

## COLUMBIA RIVER BASIN

### Flathead

13A02M	Desert Mountain	5600	54	8.4	4/27	6.8	8.9	8.4
13A05M	Marias Pass	5250	54	6.5	4/29	5.1	6.2	6.0

### Clark Fork

13C15M	Georgetown Lake	6450	48	8.3	4/30	4.5	4.1	-
13B19M	Seeley Lake	4030	48	10.6	5/5	11.2	-	-

### Bitterroot

13D18M	Gibbons Pass	7100	48	7.1	5/1	6.1	7.0	-
14C05M	Lolo Pass	5250	48	8.5	4/29	5.5	-	-

## MISSOURI RIVER BASIN

### Beaverhead

11E13M	Lakeview	6700	48	15.3	5/1	14.8	14.4	-
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### Madison

10D04M	Red Bluff	4800	40	4.7	5/3	3.5	2.4	-
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### Gallatin

11D02M	College Site	4856	54	14.5	5/1	12.5	13.4	12.1
11E06M	Twenty-One Mile	7150	48	8.8	4/30	3.6	-	-

### Missouri Main Stem

10C01M	Kings Hill	7420	48	11.8	4/29	8.2	-	-
12C08M	Stemple Pass	6350	48	5.9	4/30	5.6	-	-

### Yellowstone

10D11M	Battle Ridge	6020	48	15.4	4/29	14.3	17.2	-
10D07M	Northeast Entrance	7350	48	9.4	4/29	8.2	7.5	-
10C04M	Shields River	5850	48	17.8	4/29	16.5	17.1	-



# RESERVOIR STORAGE DATA

AS OF APRIL 30, 1964

(1000 Acre Feet)

BASIN	RESERVOIR	USEABLE CAPACITY	USEABLE STORAGE		
			THIS YEAR	LAST YEAR	AVERAGE

## COLUMBIA RIVER BASIN

Flathead	Hungry Horse	3,428.0	2,003.0	2,535.0	2,048.0**
	Flathead Lake	1,791.0	770.7	966.5	936.0
	Camas 1/	45.2	22.3	33.2	30.6
	Mission Valley 2/	100.3	26.5	38.2	46.8
Clark Fork	Georgetown Lake	31.0	25.5	24.0	21.2
	Noxon	334.6	101.1	117.8	-
Bitterroot	Como	34.9	8.1	27.8	16.5
	Painted Rocks	31.7	25.4	32.2	18.3

## MISSOURI RIVER BASIN

Beaverhead	Lima	84.0	22.9	44.5	55.9
Ruby	Ruby	38.8		32.4	27.0**
Madison	Hebgen Lake	384.8	224.6	308.2	212.1
	Ennis Lake	41.0	38.6	39.0	34.4
Gallatin	Middle Creek	8.0	5.0	5.3	4.7**
Missouri	Canyon Ferry	2,043.0	1,741.0	1,985.0	1,628.0
	Hauser & Helena	61.9	63.0	59.0	46.9
	Lake Helena	10.4	10.9	9.4	6.1**
	Holter Lake	81.9	66.2	59.1	57.1
	Smith River	10.7	9.0	10.1	8.2**
	Ackley Lake	5.8	2.8	4.1	4.0
	Durand	7.0	5.6	7.0	6.1
	Martinsdale	23.1	8.1	12.4	11.3
	Deadman's Basin	72.2	59.2	60.8	49.4**
	Fort Peck	19,410.0	11,920.0	10,230.0	11,860.0
Sun-Teton	Gibson	105.0	22.1	55.7	70.6
	Willow Creek	32.3	21.5	27.8	21.0
	Pishkun	32.0	17.0	20.8	20.7
Marias	Lower Two Medicine	16.6	2.2	-	1.9
	Four Horns	19.2	13.4	-	8.4
	Swift	30.0	14.1	18.6	27.3
	Lake Francis	112.0	37.2	67.0	100.0
Milk	Tiber	1,313.0	632.3	646.8	656.9**
	Fresno	127.2	58.4	67.5	103.5
	Nelson	66.8	26.9	40.6	36.9
	Lake Sherburne	66.1		-	24.2
Yellowstone	Mystic Lake	20.8	3.5	3.8	3.3
	Tongue River	68.0	40.5	-	17.4
	Cooney	27.5	23.0	21.7	14.7

1/ Sum of four small reservoirs on west side of Flathead Lake.

2/ Sum of eight small reservoirs in Mission Valley not including Jocko Lake.



**Agencies Cooperating in Collecting Data Contained  
in this Bulletin**

**U. S. Forest Service**  
Region 1, Missoula, Montana

**U. S. Geological Survey**  
Helena, Montana

**U. S. Army Corps of Engineers**  
Portland, Oregon  
Seattle, Washington  
Omaha, Nebraska  
Riverdale, N. D.

**U. S. Indian Irrigation Service**  
St. Ignatius, Montana

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**Soil Conservation Service**  
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**Soil Conservation Districts**  
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**Johnson Flying Service, Inc.**  
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**Water Rights Branch, Dept.  
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